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TEST REPORT N°: BYPT-ESH-P22050402B

EMC TEST REPORT

To :	ANHUI ERA SOLAR TECHNOLOGY CO., LTD.	Fax :	--
Attn :	--	Email :	--
Address :	No.7,Zhenye Road,Guangde Economic Development Zone,Xuancheng,Anhui,P.R.China		
Cc :		Fax/Email	
Attn :			
This document includes : 22 pages		Test date :	---

FACTORY NAME :	ZHEJIANG ERA SOLAR TECHNOLOGY CO., LTD.	
ADDRESS :	Sihai road, Huangyan Economic Development Zone, Taizhou, Zhejiang, China	
PRODUCT :	solar light	
TYPE REFERENCE :	Refer to the model list	
TRADE MARK :	--	
RATED VOLTAGE :	Powered by battery	
RATED INPUT POWER :	--	
PROTECTION CLASS :	III	
TESTS REALISED :	---	

STANDARDS USED(DATE) :	EN IEC 55015:2019+A11:2020/ BS EN IEC 55015:2019+A11:2020 EN 61547:2009 / BS EN 61547:2009
CLAUSES EXAMINED :	All Clauses Relevant

Test Location: Building C, No. 829, Xin Zhuan Road, Shanghai, CHINA

CONCLUSION :	The samples do satisfy the clauses examined .
Test done by, Name : Bob He <i>Bob He</i> Date : Jun.01, 2022	Approved by, Name : Yi XU Date : Jun.01, 2022

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.

LCIE China Company Limited 必维欧亚电气技术咨询服务(上海)有限公司	Building 4, No. 518, Xin Zhuan Road, CaoHejing Songjiang High-Tech Park, Shanghai, CHINA	Tel: +86 21 6195 7000 Fax: +86 21 6195 7001 Email: contact@cn.bureauveritas.com
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1 TESTING PROGRAM

The tests have been carried out according to the requirements of the following standards :

Emission standard EN IEC 55015:2019+A11:2020 / BS EN IEC 55015:2019+A11:2020

- Measurement of the continuous conducted emission levels.
- Measurement of the radiated emission levels.

Immunity standard EN 61547:2009 / BS EN 61547:2009

- Immunity to electrostatic discharges - publication IEC 61000-4-2.
- Immunity to fast transients/bursts - publication IEC 61000-4-4.
- Immunity to conducted disturbances induced by radio-frequency fields - publication IEC 61000-4-6.
- Immunity to radiated radio-frequency electromagnetic field with amplitude modulation - publication IEC 61000-4-3.
- Immunity to surges - publication IEC 61000-4-5.
- Immunity to voltage dips -publication IEC 61000-4-11.
- Immunity to voltage interruptions - publication IEC 61000-4-11.

Special Comment : This co-report is based on history report ERA-ESH-P21123938B

2 HISTORY OF FAILURE

None.

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3 EQUIPMENT CHARACTERISTICS

3.1 Model List

Test model: 2322012

Series model : EC2355, EC11014, EC11037, EC11044, EC11045, EC11045-1, EC11046, EC11047, EC11048, EC11050, EC11052, EC11053, EC11055, EC11056, EC11058, EC11060, EC11060-3, EC11062, EC11069, EC11070, EC11085, EC11088, EC11095, EC11103-D1, EC11103-D2, EC11111, EC11115, EC11116, EC11117, EC11118, EC11119, EC11120, EC11122, EC11123, EC11124, EC11125, EC11126, EC11127, EC11128, EC11129-1, EC11129-5, EC11132, EC11135, EC11136, EC11137, EC11146, EC11149, EC14011, EC21156, EC21229, EC23133-B1, EC23435, EC41057, EC41075, EC23133-C1, EC23134, EC23134-B1, EC23134-D1, EC23137, EC23184, EC23184-D1, EC23185, EC23201, EC23204, EC23211, EC23211-1, EC23216, EC23216-B1, EC23216-C1, EC23216-D1, EC23217, EC23221, EC23230, EC23230-D1, EC23230-D2, EC23234, EC23235, EC23236, EC23241, EC23242, EC23245, EC23245-C1, EC23252, EC23262, EC23276-1, EC23280, EC23288, EC23289, EC23291-1, EC23291-2, EC23291-5, EC23291-6, EC23291-D2, EC23291-D3, EC23310, EC23311, EC23322, EC23329, EC23330, EC23331, EC23333, EC23334, EC23335, EC23336, EC23341, EC23342, EC23343, EC23344, EC23345, EC23346, EC23346-1, EC23348, EC23351, EC23352, EC23353, EC23357, EC23357-C1, EC23359, EC23366, EC23374, EC23379, EC23379-C1, EC23386, EC23387, EC25219, EC25226, EC41012, EC41013, EC41015, EC41018, EC41025, EC23347, EC23388, EC23401, EC41026, EC41028, EC41037, EC61012, EC61013, EC61015-D1, EC61015-D4, EC61015-D5, EC61015-D6, EC61016-D1, EC61016-D2, EC61017, EC61018-D1, EC61018-D2, EC61018-D3, EC61019-D1, EC61019-D2, EC41046, EC41053, EC41052, EC41051, EC41055, EC11155, EC61026-1, EC61026-2, EC23400, EC23402, EC23405, EC23403, EC23413, EC23433, EC23428, EC23423, EC41073, EC23429, EC23432, EC11153, EC11150, EC61029, EC61030, EC61013-1, EC61013-2, EC61023, EC11075, EC11157, EC11017, EC11103-2, EC23211C, EC41029, EG1001, EG1002, EG1003, EG1004, EG1005, EG1006, EG1007, EG1008, EC23451, EC23438, EC23453, EC23445, EC11165, EC11163, EC11166, EC11167, EG1009, EG1010, EG1011, EG1012, EC23452, EC23439, EC23439-1, EG1015, EG1016, EG1017, EC23404, EC32101, EC23443, EG1014, EC41059, EG1013, EG1018, EG1019, EG1020, EG1021, EG1022, EG1023, EG1024, EG1025, EG1026, EG23442, EG11168, EC23446, EC23441, EC23456, EC23440, EC23465, EC23379-C2, EC23467, EC23457, EC23449, EC23458-1, EC23459, EC11171, EC41069, EC41070, EC41071, EC41072, EC23461, EC41027, EC41028, EC41040, EC23437, EC11103-2ORB, EC2306, EC61039, EC61040, EC11129-5BRONE, EC11132BRONZE, EC41049-D1, EC11151, EC11103-2, EC23418, EC23460-1, EC23443-1, EC23455, EC23436, EC23133-D1, EG1028, EG1033, EG1034, EG1032, EC11088-B1, EC11115-2, EC11187, EC11188, EC11189, EC23356, EC23356-1, EC23375, EC23389, EC23466, EC23482, EC23482-1, EC23483, EC23489, EC23490, EC23493, EC23495, EC23496, EC23496-C1, EC11190, EC23486, EC23487, EC23498, EC41089, EC41090, EC41090-C1, **EC41060 (2322012)**, EC41087 (2322013), EC41088 (1594087), EC41089 (2322017), EC41091 (1605155), 1600217 (8535264), 2010500 (8541159), 8541156, EC11173, EC11172, EC11175, EC11176, EC11176G, EC11176ORB

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3.2 Pictures of the samples





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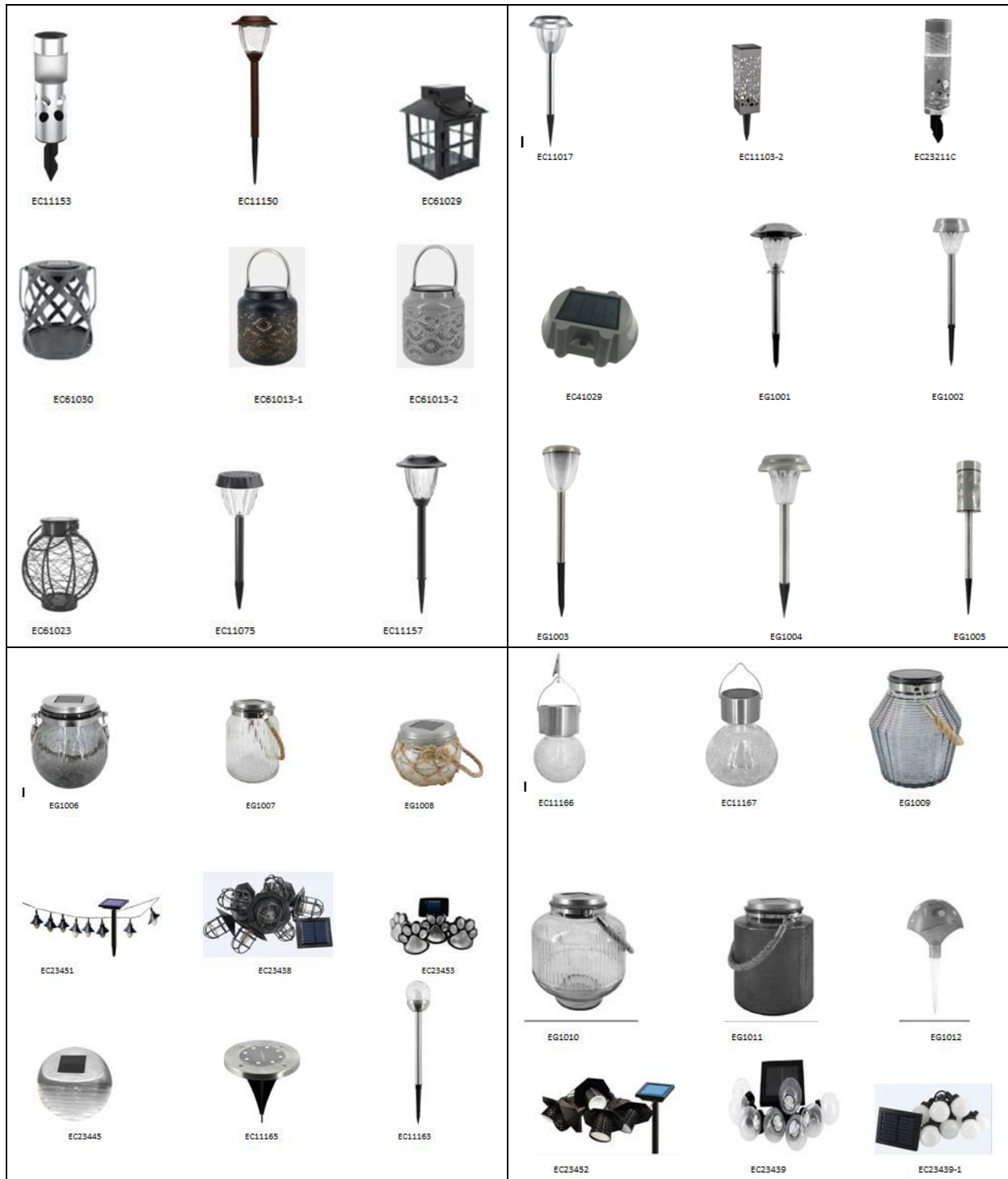
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 EC23489  EC23490  EC23493  EC23495  EC23496  EC23496-C1  EC11190  EC23486  EC23487	 EC23498  EC41089  EC41090  EC41090-C1  EC41060(2322012)  EC41087(2322013)  EC41088 (1594087)  EC41089(2322017)  8541156
 2010500 (8541159)  1600217 (8535264)  EC11172  EC11173  EC11175  EC11176  EC11176G  EC11176ORB	<p>None</p>

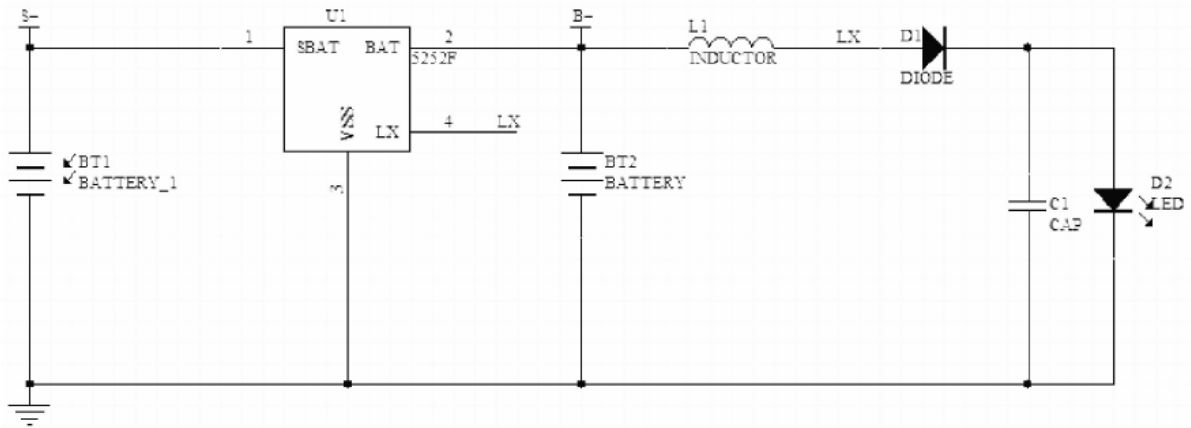


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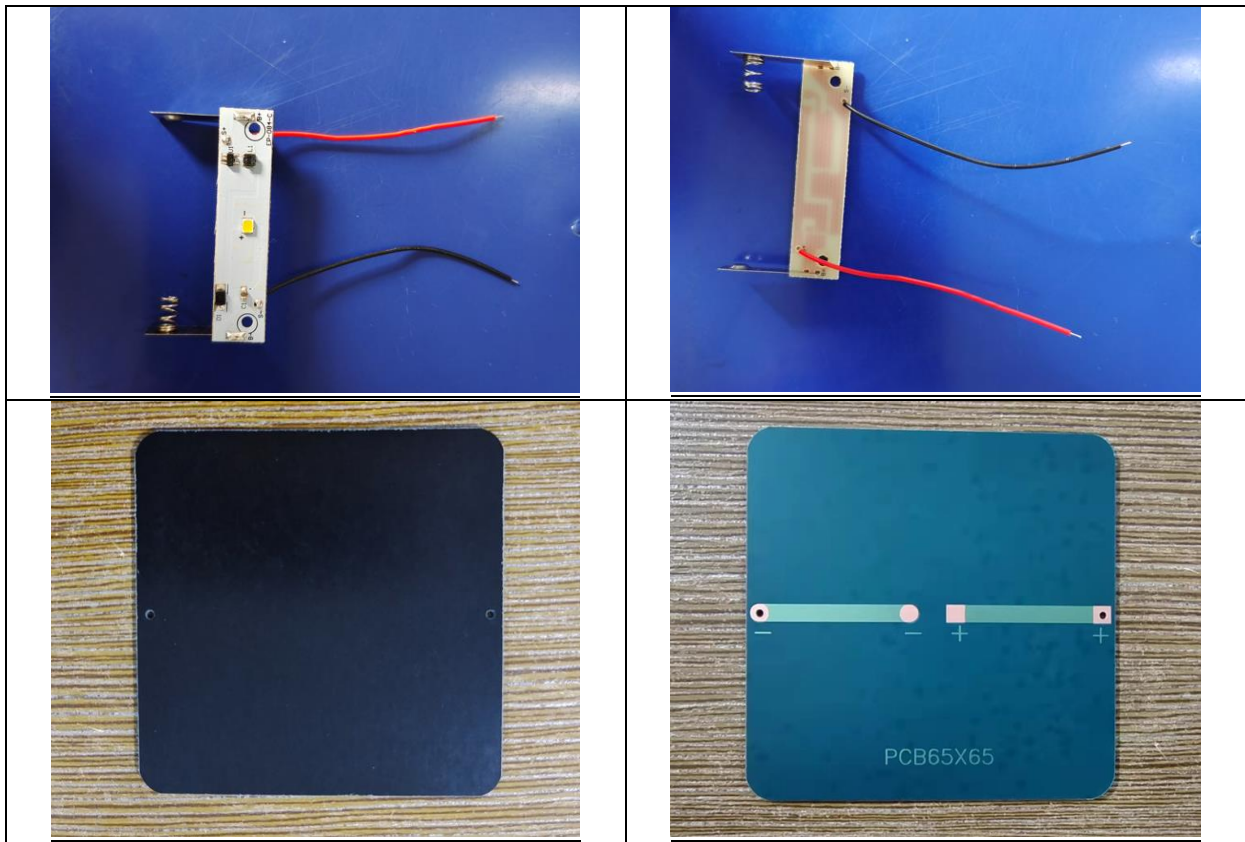
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3.3 Circuit diagram and PCB layout

Circuit diagram:



PCB layout:





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4 OPERATING CONDITIONS

The apparatuses were placed in a shielded room, full or semi anechoic chamber, and were powered with an alternative current source through filters mounted on the shielded room wall. The apparatuses were worked continuously.

Ambient conditions :

Temperature	:	20.0-23.0 °C
Relative humidity	:	52.0-53.0 %
Atmospheric pressure	:	101.1-101.3 kPa

5 PERFORMANCE CRITERIA

- Criterion A : During the test no change of the luminous intensity shall be observed, if any, shall operate during the test as intended.
- Criterion B : During the test the luminous intensity may change to any value. After the test the luminous intensity shall be restored to its initial value within 1 min.
- Criterion C : During and after the test any change of the luminous intensity is allowed and the lamp may be extinguished. After the test, within 30 min, all functions shall return to normal if necessary by temporary interruption of the mains supply.

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6 TEST RESULTS

6.1 EMISSION STANDARD EN IEC 55015:2019+A11:2020 / BS EN IEC 55015:2019+A11:2020

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
4.3	<u>Disturbance Voltage of wired network ports</u>	Operating conditions : according to the article 7				
4.3.1	Mains terminals Frequency range: 0,009 to 30 MHz	Port(s) : • AC mains port Diagram(s) No. < >	[]	[]	[X]	[1]
4.4	<u>Disturbance Voltage of local wired ports</u>	• Load and control terminals Diagram(s) No. < >	[]	[]	[X]	[1]
	Frequency range : 0,009 to 30 MHz					
4.5	<u>Radiated Electromagnetic Disturbance</u>	Operating conditions : according to the article 7				
4.5.2	Frequency range : 0,009 to 30 MHz	• 2 m Loop antenna Diagram (s) No. <1>	[X]	[]	[]	[]
4.5.3	<u>Radiated disturbance limit</u>	Operating conditions : according to the article 7				
	Frequency range: 30 to 1000 MHz	Port(s) : Enclosure Measurement distance: 3 m Antenna Position • Vertical • Horizontal Diagram(s) No. <2>	[X] [X]	[] []	[] []	[] []

P : pass - F : Fail - NA : not applicable - Rem : remark



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6.2 IMMUNITY STANDARD EN 61547:2009 / BS EN 61547:2009

For lighting equipment containing active electronic components which e.g. convert or regulate the operating voltage and/or the frequency of the light source.

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
5.2	<u>Electrostatic discharges</u>	Contact discharges Level : ± 4 kV Application points :				
	Table 1 Enclosure Performance criteria B	<ul style="list-style-type: none"> • horizontal coupling plane • vertical coupling plane • screw and metal part 	[X] [X] [X]	[] [] []	[] [] []	[2] [2] [2]
	Performance criteria B	Air discharges Level : ± 8 kV Application points :				
		<ul style="list-style-type: none"> • plastic enclosure • gap 	[X] [X]	[] []	[] []	[2] [2]
5.3	<u>Radio-frequency electromagnetic fields 80 to 1000 MHz</u>	Test field strength : 3 V/m (unmodulated signal) Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time : 2 s Logperiodic antenna :				
	Table 2 Enclosure Performance criteria A	<ul style="list-style-type: none"> - horizontal position - vertical position 	[X] [X]	[] []	[] []	[2] [2]
5.4	<u>Power Frequency Magnetic Field</u>	Field frequency : 50/60 Hz Level : 3 A/m				
	Table 1 Enclosure Performance criteria A		[]	[]	[X]	[]
5.5	<u>Fast transients/bursts</u>	Level : ± 1 kV Rise time/hold time : 5/50 ns Repetition rate : 5 kHz Testing time : 2 min Port(s) :				
	Table 6 Alternative current power input and output ports Performance criteria B	<ul style="list-style-type: none"> • AC mains 	[]	[]	[X]	[1]

P : pass - F : Fail - NA : not applicable - Rem : remark



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Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
5.6	<u>Injected current 0,15 to 80 MHz</u> <u>Table 9</u> Alternative current power input and output ports Performance criterion A	Voltage level : 3 V (unmodulated signal) Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time: 2 s Application with CND-M2/M3 Port(s) : • AC mains	[]	[]	[X]	[1]
5.7	<u>Surges</u> <u>Table 10</u> Alternative current power input and output ports Performance criterion C	Tr/Th(μs) : 1.2/50 (8/20) Number of surges : 5 positive and 5 negative Phase angles : 90° and 270° Level : ± 0.5 kV Port(s) : • power input, between lines and neutral	[]	[]	[X]	[1]
	Performance criterion C	Level : ± 1 kV Port(s) : • power input, between lines and earth • power input, between neutral and earth	[]	[]	[X]	[]
			[]	[]	[X]	[]
5.8	<u>Voltage dips and voltage interruptions</u> <u>Table 12</u> Alternative current power input and output port(s) Performance criterion B	<u>Voltage interruptions</u> Test level : 0 % Ut-> 0 V Duration : 10 ms Phase angles : 0° and 180° Port(s) : • AC mains	[]	[]	[X]	[1]
	<u>Table 11</u> Alternative current power input and output port (s) Performance criterion C	<u>Voltage dips</u> Test level : 70 % Ut-> 161 V Duration : 200 ms Phase angles : 0° Port(s) : • AC mains	[]	[]	[X]	[1]

P : pass - F : Fail - NA : not applicable - Rem : remark



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Remark(s) :

- 1 : The EUT is powered by battery.
- 2 : During test, no change of operation state.

7 CONCLUSION

The apparatuses solar light and models Refer to the model list are in compliance with the requirements of the standards EN IEC 55015:2019+A11:2020 / BS EN IEC 55015:2019+A11:2020 and EN 61547:2009 / BS EN 61547:2009.



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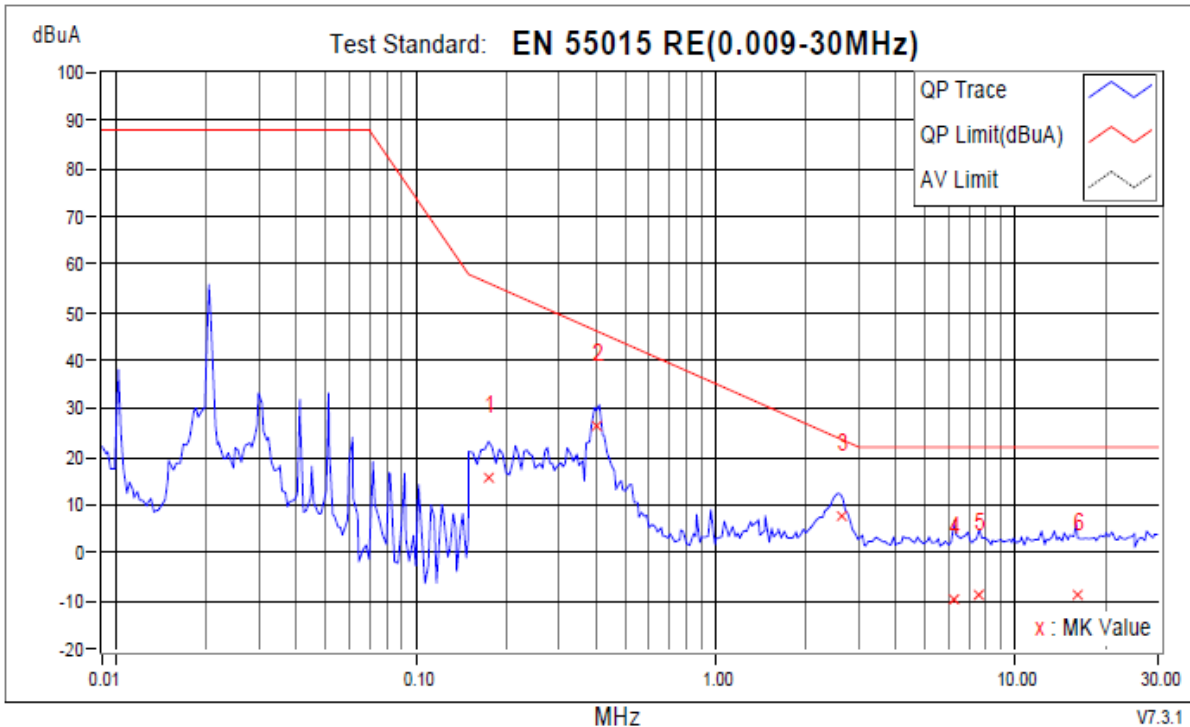


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Diagram No. 1

Location: Conduction 1 Date: 12/17/2021 Time: 9:23:59 AM Phase X
 Temperatur (C): 23 Humidity (%): 53 Approved by:



No.	Frequency MHz	Corr. Factor dB	Reading dBuA QP	Emission dBuA QP	Limit dBuA QP	Margins dB QP	Notes
1	0.17500	0.00	15.63	15.63	56.15	-40.52	
2	0.40000	0.00	26.18	26.18	46.21	-20.03	
+3	2.61000	0.00	7.84	7.84	23.67	-15.83	
4	6.25000	0.00	-9.76	-9.76	22.00	-31.76	
5	7.58500	0.00	-8.66	-8.66	22.00	-30.66	
6	15.98500	0.00	-8.97	-8.97	22.00	-30.97	

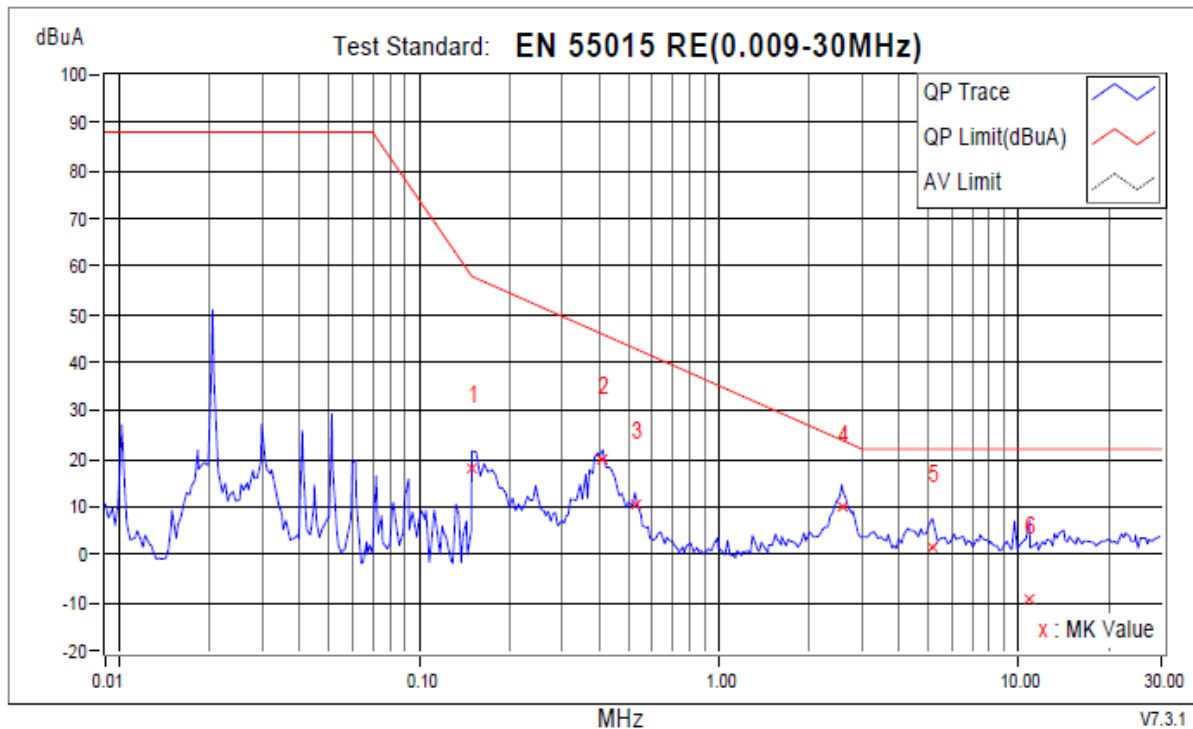


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Continued

Location: Conduction 1 Date: 12/17/2021 Time: 9:30:46 AM Phase Y
 Temperatur (C): 23 Humidity (%): 53 Approved by:



No.	Frequency MHz	Corr. Factor dB	Reading QP dBuA	Emission QP dBuA	Limit QP dBuA	Margins QP dB	Notes
1	0.15000	0.00	17.85	17.85	58.00	-40.15	
2	0.41000	0.00	19.70	19.70	45.92	-26.22	
3	0.52500	0.00	10.50	10.50	42.95	-32.45	
+4	2.57500	0.00	9.98	9.98	23.84	-13.86	
5	5.16000	0.00	1.34	1.34	22.00	-20.66	
6	10.86000	0.00	-9.27	-9.27	22.00	-31.27	

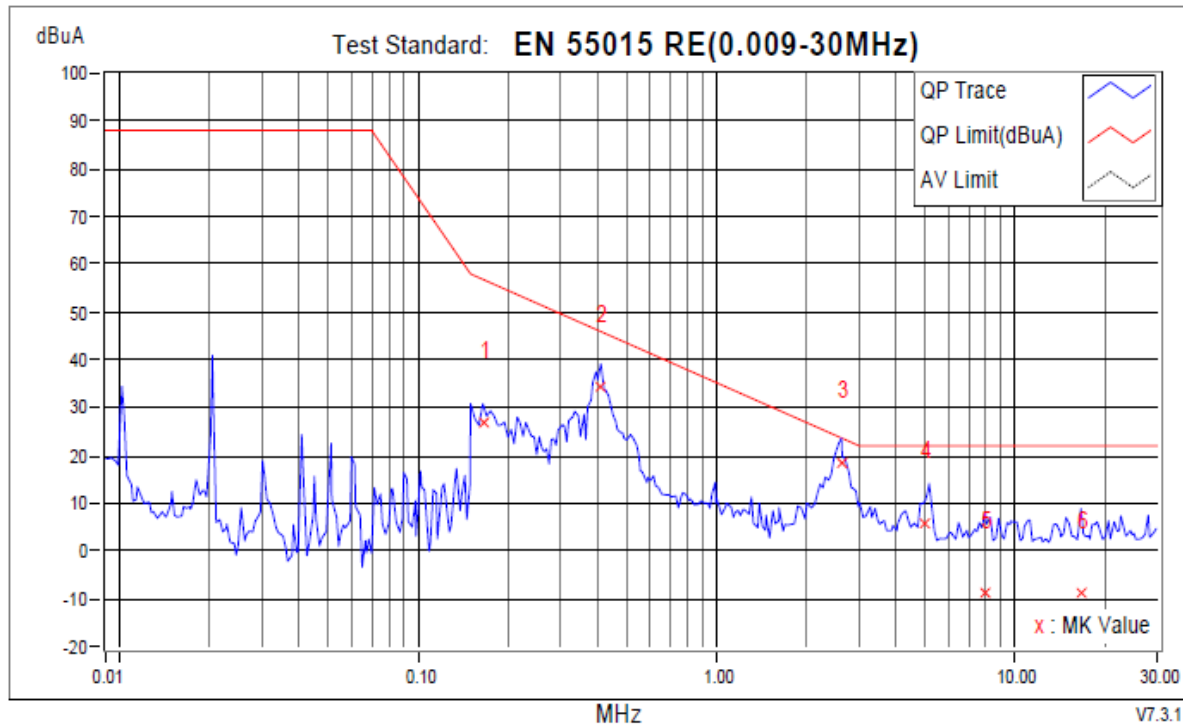


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Location: Conduction 1 Date: 12/17/2021 Time: 9:36:51 AM Phase Z
 Temperatur (C): 23 Humidity (%): 53 Approved by:



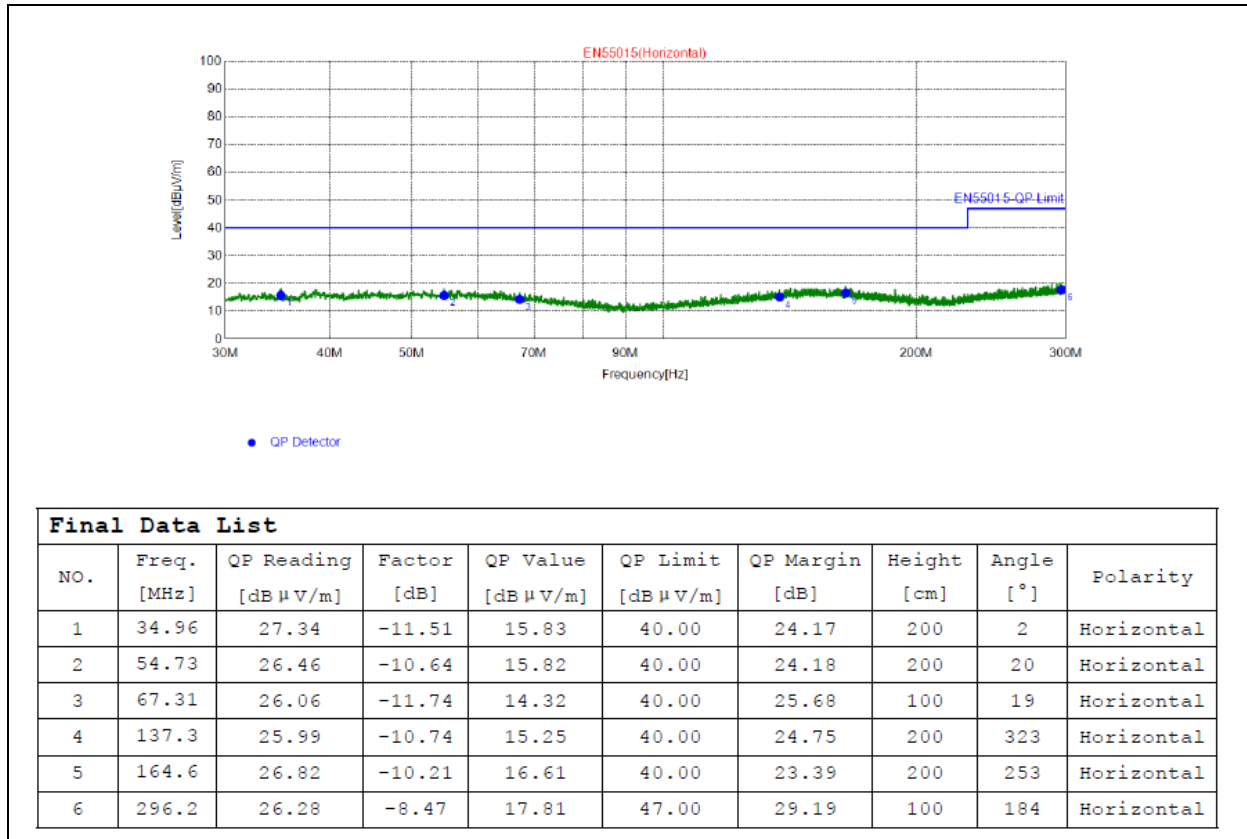
No.	Frequency MHz	Corr. Factor dB	Reading dBuA QP	Emission dBuA QP	Limit dBuA QP	Margins dB QP	Notes
1	0.16500	0.00	26.91	26.91	56.85	-29.94	
2	0.41000	0.00	34.55	34.55	45.92	-11.37	
+3	2.62000	0.00	18.45	18.45	23.63	-5.18	
4	5.01500	0.00	5.87	5.87	22.00	-16.13	
5	7.93500	0.00	-8.61	-8.61	22.00	-30.61	
6	16.60000	0.00	-8.63	-8.63	22.00	-30.63	



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Diagram No. 2

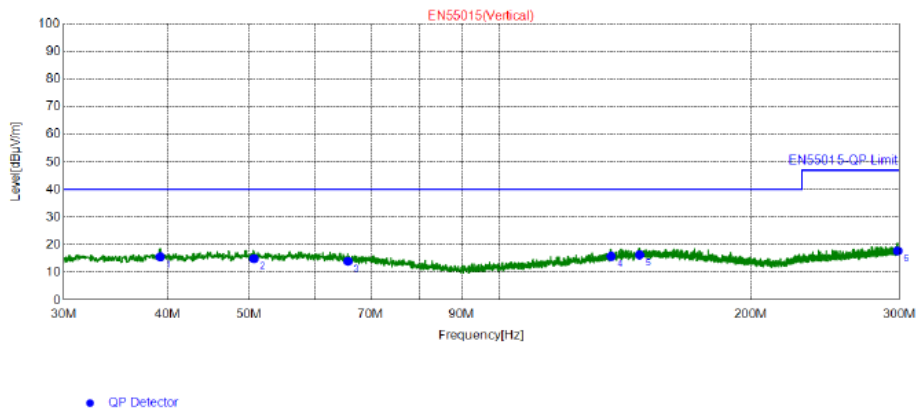




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Final Data List									
NO.	Freq. [MHz]	QP Reading [dB µV/m]	Factor [dB]	QP Value [dB µV/m]	QP Limit [dB µV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	39.18	26.91	-11.16	15.75	40.00	24.25	200	309	Vertical
2	50.73	25.61	-10.56	15.05	40.00	24.95	200	51	Vertical
3	65.74	25.58	-11.53	14.05	40.00	25.95	100	43	Vertical
4	135.9	26.78	-10.89	15.89	40.00	24.11	200	340	Vertical
5	146.9	26.37	-10.00	16.37	40.00	23.63	200	130	Vertical
6	298.4	26.31	-8.41	17.90	47.00	29.10	100	278	Vertical

